



# UNITED STATES PATENT AND TRADEMARK OFFICE

KS

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,720	01/07/2002	Joseph J. Dlugokecki	20646-719	4175

7590 03/04/2004

KIEUN JENNY SUNG  
GARY, CARY, WARE & FREIDENRICH  
1755 Embarcadero Road  
Palo Alto, CA 94303

EXAMINER

CHAMBLISS, ALONZO

ART UNIT PAPER NUMBER

2827

DATE MAILED: 03/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

15

<b>Office Action Summary</b>	<b>Application No.</b> 10/041,720	<b>Applicant(s)</b> DLUGOKECKI ET AL.	
	<b>Examiner</b> Alonzo Chambliss	<b>Art Unit</b> 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                                                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

### **DETAILED ACTION**

1. Amendment A filed on 12/11/03 has been fully considered and made of record in Paper No. 6. Furthermore, the previous non-final rejection has been withdrawn and the new non-final rejections are set forth below.

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-4, 8, 9, 11, 13, and 21 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Dlugokecki (U.S. 5,318,926).

With respect to Claim 1, Dlugokecki teaches deconstructing an integrated circuit package for exposing a wire bond pad and a lead frame located therein in col. 6 lines 24-68 and col. 7 lines 1-15. Attaching a die 62 to exposed wire bond pads of a lead frame 65 so that the die 62 is electrically connected to the lead frame 65. The die 62 and wire bond pads are encapsulated by an encapsulant 82 and reshaping of the upper surface of the encapsulant 82 where at least a portion of the encapsulant reshaping is performed by a lapping process (i.e. process of removing a material) (see col. 7 lines 16-68; Figs. 4-8).

With respect to Claims 2 and 3, Dlugokecki teaches wherein lapping is performed by ablative lapping process (i.e. a process to remove by cutting) and mechanically (see col. 6 lines 47-66).

With respect to Claim 4, Dlugokecki teaches wherein encapsulating the die 62 and the wire bond pads results in the encapsulant 82 having a convex or concave an upper surface, and reshaping the encapsulant 82 results in the encapsulant 82 having a planar an upper surface (see col. 7 lines 51-65; Figs. 5 and 8).

With respect to Claims 8, 9, 11, 13, and 21, Dlugokecki teaches wherein lapping is performed using a planar abrasive surface (i.e. mechanical grinding utilizing a wheel to initial the motion of the grind), chemical etching, or plasma etching (see col. 6 lines 47-68).

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Minamio et al. (U.S. 6,680,220).

With respect to Claims 5 and 6, Dlugokecki fails to disclose marking the upper surface of an encapsulant that is sufficiently flat to permit labeling by mechanical marking techniques to simulate a production transfer molded encapsulated IC package. However, Minamio discloses marking the upper surface of an encapsulant 6 that is sufficiently flat to permit labeling by mechanical marking 12-14 techniques to simulate a production transfer molded encapsulated IC package (see abstract and col. 8 lines 23-46; Figs. 8A, 8B, 9A, 9B, 10, and 11). Therefore, it would have been obvious to incorporate a marking on the upper surface of the encapsulant of Dlugokecki, since the marking would label the type of semiconductor device manufactured after the transfer molding process as taught by Minamio.

6. Claims 7 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Capote et al. (U.S. 6,566,234).

With respect to Claims 7 and 16, Dlugokecki both fail to disclose wherein lapping is performed using laser ablation. However, Capote discloses wherein lapping (i.e. process of removing a material) is performed using laser ablation (see col. 8 lines 55-

60). Therefore, it would have been obvious to substitute a laser ablation process for the mechanical process taught by Dlugokecki, since the laser ablation would facilitate the removal of the encapsulant material from the surface of the semiconductor device as taught by Capote.

With respect to Claims 15 and 17, one skilled in the art would readily recognize utilizing the combination of mechanical and electromagnetic ablation or the combination of electromagnetic and chemical ablation process with the process of Dlugokecki, since the combination would effectively improve the time needed to remove the desired amount of encapsulant from a semiconductor device.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Tani et al. (U.S. 6,080,602).

With respect to Claim 10, Dlugokecki fails to disclose wherein lapping is performed to permit more than one package to be lapped at the same time. However, Tani discloses lapping is performed to permit more than one package to be lapped at the same time (see Fig. 3D). Thus, Dlugokecki and Tani have substantially the same environment of lapping an encapsulant material. Therefore, it would have been obvious to incorporate lapping of more than one package, since the lapping process would decrease the lapping time and reduce the cost of making semiconductor devices as taught by Tani.

Art Unit: 2827

8. Claims 12, 14, 18-20, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dlugokecki (U.S. 5,318,926) as applied to claim 1 above, and further in view of Wensink (4,384,917).

With respect to Claims 12, 18-20, and 22, Dlugokecki does not explicitly disclose wherein lapping is performed using a gas that has an ultra-fine particulate using a high pressure and a pulsating liquid jet containing a particulate material under high pressure. However, Wensink discloses wherein lapping is performed using a gas that has an ultra-fine particulate using a high pressure and a liquid jet having some level of pulsating (i.e. based on the flow of liquid through the jet pump) that contains a particulate material under high pressure (see col. 2 lines 42-51). Dlugokecki and Wensink both have substantially the same environment of utilizing a lapping process to reduce the thickness of an encapsulant material on a semiconductor device. Therefore, it would have been obvious to one skilled in the art at the time of the invention to incorporate the jet lapping process into the process of Dlugokecki, since the jet would facilitate rapid and safe of the reduction in the thickness of an encapsulant material on a semiconductor device as taught by Wensink.

With respect to Claim 14, one skilled in the art would readily recognize utilizing the combination of a mechanical and chemical ablation process taught by Dlugokecki, since the combination would effectively improve the time needed to remove the desired amount of encapsulant from a semiconductor device.

The prior art made of record and not relied upon is cited primarily to show the process of the instant invention.

***Conclusion***

9. Any inquiry concerning the communication or earlier communications from the examiner should be directed to Alonzo Chambliss whose telephone number is (703) 306-9143. The fax phone number for this Group is (703) 308-7722 or 7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-7956

**AC/February 8, 2004**

A handwritten signature in black ink, appearing to read 'Alonzo Chambliss', is positioned above the printed name.

Alonzo Chambliss  
Patent Examiner  
Art Unit 2827